About Our CONTRIBUTORS

FREDERICK H. DONER, D.D.S. is a graduate of the University of Pennsylvania, class of 1923. Doctor Doner is a general practitioner with a particular interest in porcelain restorations, on which subject he has written several articles. His last publication in this magazine, in March, 1937, described A DETACHABLE DIE EXTENSION.

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BERNARD Z. RABINOWITCH received his D.D.S. in 1937 at the University of Southern California College of Dentistry and a certificate in 1938 from the Forsyth Dental Infirmary for Children. Doctor Rabinowitch who specializes in pediodontia has been a clinical instructor at the University of Southern California since January, 1939, and has been on the staff of Cedars of Labanon Hospital since June, 1938.

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GEORGE A. SWENDIMAN D.D.S. (Northwestern University Dental School, 1913) has previously contributed to the dental periodical literature and is the author of a book on DENTAL HEALTH which was published in Boston in 1930 by the Stratford Company. Doctor Swendiman is a general practitioner whose original observation in this issue will provoke interest among all students of dental caries.

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WILLIAM ARTHUR MENDELSOHN has written numerous articles on light as related to the eyes; for the purpose of charting and interpreting visual color fields, particularly for patient education purposes; and as related to matching of shades of teeth (January, 1938, DIGEST) As a member of the Illuminating Engineering Society, Doctor Mendelsohn makes another timely application of his knowledge of light.

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EDITORIAL OFFICE—708 Church Street, Evanston, Illinois.
PUBLICATION OFFICE—1005 Liberty Avenue, Pittsburgh, Pennsylvania.
MERWIN B. MASSOL, Publisher.
ROBERT C. KETTERER, Publication Mgr.
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THE DENTAL DIGEST

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Edward J. Ryan, B.S., D.D.S., *Editor*
Ethel H. Davis, A.B., *Assistant Editor*
708 Church Street, Evanston, Illinois

SEE SECOND COVER FOR SUBSCRIPTION DATA, ETC.

Cast Porcelain by the Use of a Cellulose Nitrate Mold

FREDERICK H. DONER, D.D.S., Watertown, New York

THE CASTING OF DENTAL porcelain will produce a piece of porcelain of maximum density, of greater strength, and of minimum shrinkage. A simple procedure for this purpose will be presented here.

A cast is an object formed by the solidification of a liquid poured into a mold. Casting, in this sense, is a well known procedure in industrial ceramics where, because of the materials and methods employed, the process is simple.

Dental porcelain is a fritted material and, therefore, lacks the cohesive property found in other ceramic materials which are virtually a free clay. If, however, a mold is employed which will entirely disappear in firing, the casting of dental porcelain is possible. By using a mold of cellulose nitrate, it is possible to cast a porcelain crown, either jacket or dowel, a porcelain wing bridge, a porcelain pontic, and a class IV porcelain inlay.

Average Working Time Consumed in Making Porcelain Jacket Crown by Cast Method

Making wax pattern	12 minutes
Pouring split plaster mold	2 minutes
Coating low-fusing metal die	3 minutes
Making platinum matrix	5 minutes
Placing Porcelain in cellulose mold	10 minutes
Correcting and grinding biscuited crown to place	15 minutes
Total:	47 minutes

Cast Porcelain Jacket Crown Technique

The principal steps in the casting of a porcelain crown are the following: (1) Preparation of the tooth and the data obtained; (2) making the die; (3) preparing the die; (4) preparing the matrix; (5) preparing the pattern for the mold; (6) making the cellulose nitrate mold; (7) casting the porcelain; (8) firing technique; (9) adjusting the biscuited crown; and (10) glazing.

1. *Preparation of Tooth*—The preparation of the tooth is carried out as usual. The data obtained are the same as in any indirect operation: a band impression, a good wax impression in a tray, a wax bite, and a diagram of the shades.

2. *Making the Die*—A tube should be built around the open end of the band impression of sufficient length to facilitate its handling. This tube may be made by wrapping gummed paper or base-plate wax around the band, or by the use of a gelatin capsule of proper size.

3. *Preparation of the Die*—a) An area from the shoulder toward the root-end should be beveled for a distance of from 2 mm. to 3 mm. to allow for an apron on the matrix.

b) The sides of the remainder of the die extension should either be paralleled or flared rootwise. The surfaces of the extension should be flattened rather than rounded. This is done so that when the cellulose mold is put on the die, it will have a definite seat and will go to place easily.

c) There should be two holes drilled on two opposite surfaces of the die extension about 5 mm. from the shoulder. This will serve as a stop for the mold.

4. *The Matrix*—A matrix of dead soft platinum foil .001 gauge is made, burnished, and swaged in the usual manner.

5. *The Pattern*—Put the die in place in the model and over it roughly carve a crown of wax, either base-plate or inlay wax. This wax crown must be built over-size to allow for the shrinkage that will take place after the cast crown has been fused. The average allowance for this shrinkage is: 1 mm., labio-lingually; 1 mm., gingivo-incisally; and 2 mm., mesio-distally. To be sure, these dimensions are only average and will vary according to the size of the crown to be replaced. The wax should be carried about .5 mm. above the shoulder. When the wax crown has been removed from the

DIGEST

Definition—A cast is an object formed by the solidification of a liquid poured into a mold. It is in this ceramic sense that the words *cast* and *casting* are used here.

Characteristics of Materials—Dental porcelain is a fritted material, lacking the cohesive property found in other ceramic materials; therefore, it can be cast only by the use of a mold that will entirely disappear in firing. Such a mold is obtainable with cellulose nitrate.

Principal Steps in Technique—(1) Preparation of tooth; (2) making the die; (3) preparing the die; (4) preparing the matrix; (5) preparing the pattern for the mold; (6) making the cellulose nitrate mold; (7) casting the porcelain; (8) firing technique; (9) adjusting the biscuited crown; (10) finishing and glazing.

Time—Forty-seven minutes are required for the construction of a porcelain jacket cast crown.

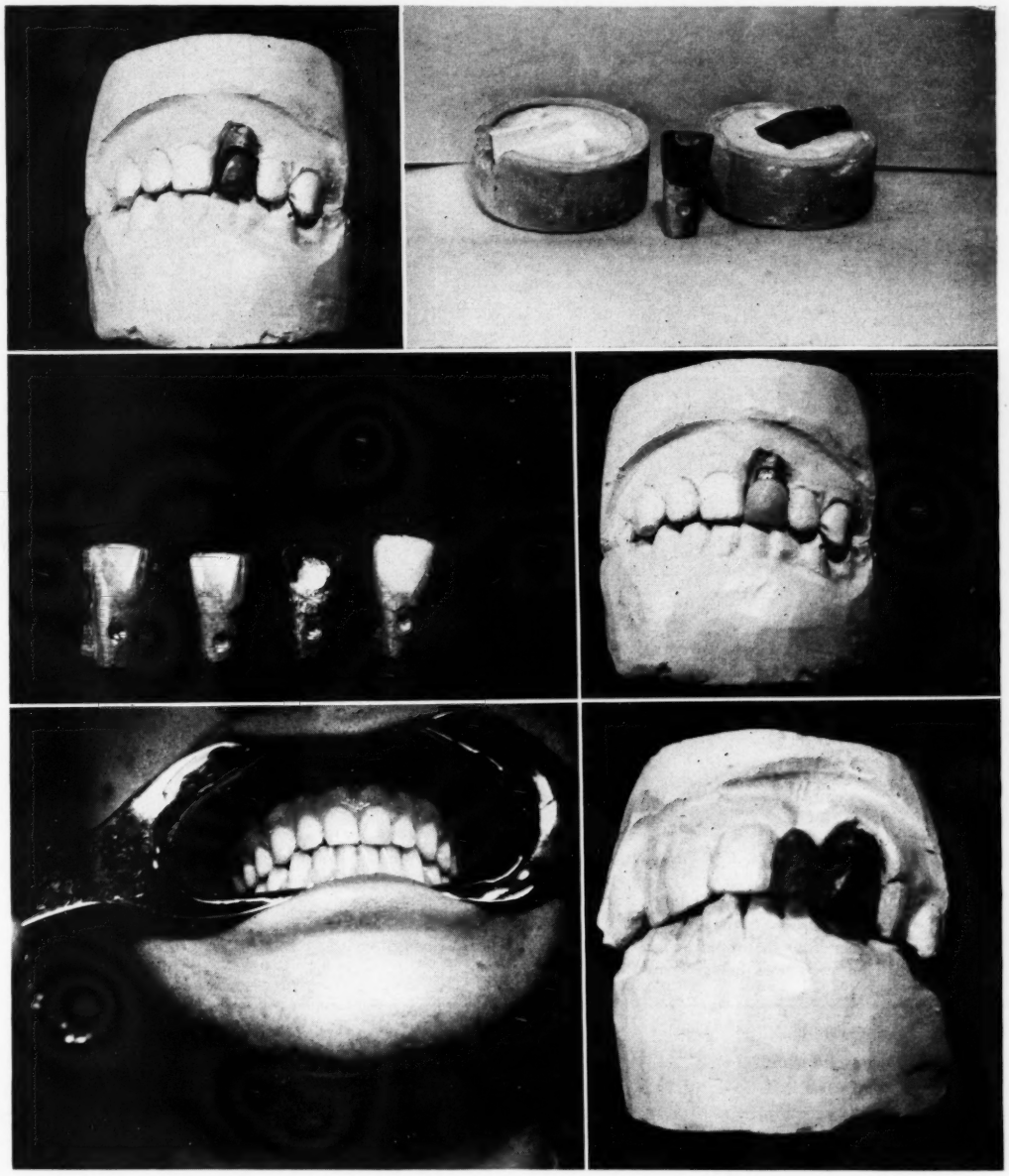


Fig. 1 (Top left)—Wax pattern in place on model.
Fig. 2 (Top center)—Wax pattern with mesial and distal additions; labial depression in amalgam die; split plaster mold of wax pattern.
Fig. 3 (Center left)—Low-fusing die with collodion, seams pressed together; seams burnished against die; cellulose mold with its ingate in place on amalgam die; porcelain in place in mold.
Fig. 4 (Center right)—Biscuited crown in place on model.
Fig. 5 (Bottom left)—Glazed crown cemented in mouth.
Fig. 6 (Bottom right)—Wax abutment and pontic in place on model.

model the indentations made by the adjacent teeth are filled in and the surface of the wax is made smooth.

The pattern also may be made by fitting a Caulk's celluloid crown form to the die, filling it with wax, adjusting it as to alinement, and adding wax to it to increase its size.

6. *Making the Cellulose Nitrate Mold*—a) The pattern together with the die and its matrix are oiled and placed, crown downward, in a rubber ring filled with soft plaster.

b) The plaster should be carried well up on the die; that is, about 5 mm. above the shoulder.

c) The impression is split and opened; the pattern is removed, and the parts of the impression are assembled.

d) A low-fusing metal die is made by pouring S. S. White's low-fusing metal 160 into the impression. This metal melts at 160° F. Any roughness or extension on this die must be made smooth.

e) Place about one eighth of an inch of collodion in a shallow, flat-

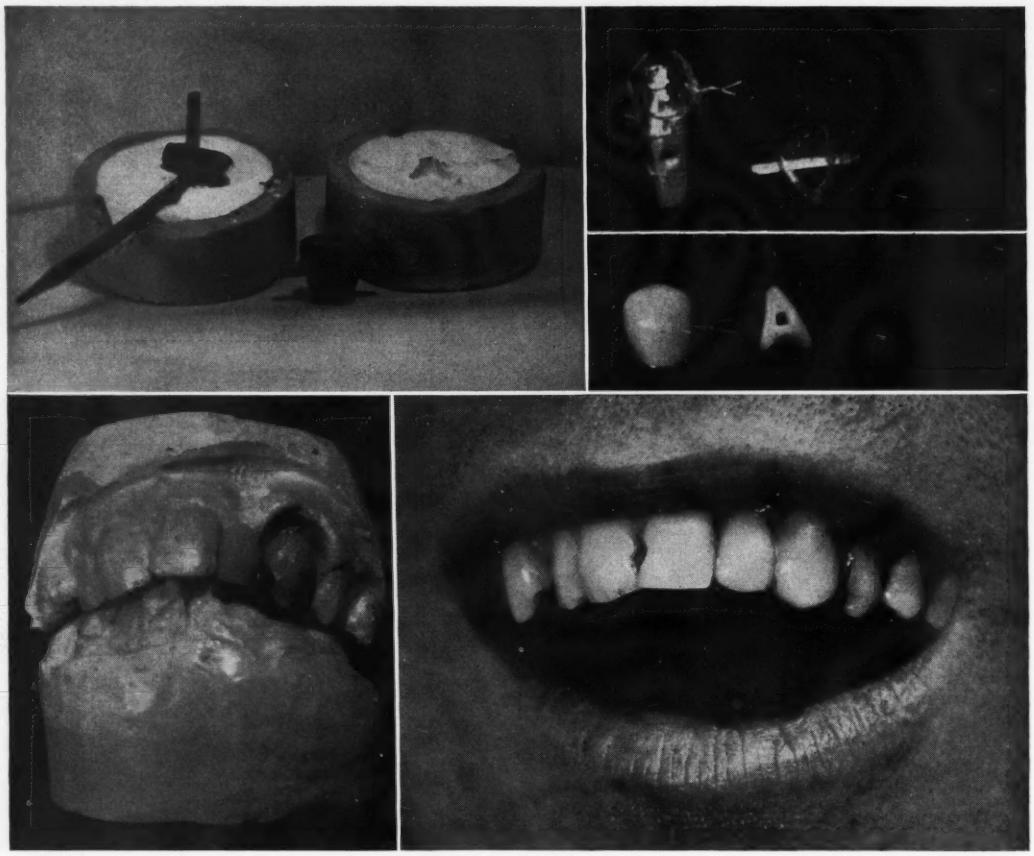


Fig. 7 (Top left)—Wax pattern of pontic with additions; split master mold of pontic showing sprue through which low-fusing metal is poured.
Fig. 8 (Top right)—Cellulose mold in place on amalgam die, showing platinum supporting wire.
Fig. 9 (Top right)—Biscuited crown and pontic ready to be assembled.
Fig. 10 (Center left)—Crown and pontic held together with some collodion.
Fig. 11 (Center right)—Glazed bridge cemented in mouth.

bottomed dish and allow the alcohol-ether solvent to evaporate until it becomes dry and flexible. Place a piece of this cellulose nitrate on the labial surface of the metal die, beginning at the root-end and carrying it over the incisal edge until the root-end on the lingual surface is reached.

f) With a pair of thin-beaked serrated pliers, press the edges together on the mesial and distal surfaces. Separate the edges; moisten with some ether, and press together again with the pliers, forming a tight union.

g) Trim away the excess of the joint; moisten the seam with ether, and burnish flat against the die. The entire surface of the cellulose should be burnished against the die.

h) Two holes are cut in the cellulose mold to correspond with the holes drilled in the amalgam die.

If the mold is to be strong and clear, it is necessary to subject it to a coagulating medium that will bring about a molecular fixation.

i) When the mold has been burnished well on the die, it is placed in a coagulating solution for a few minutes and then thoroughly washed.

Composition of Coagulating Bath

Per Cent	
8.	sulphuric acid
17.5	ammonium sulphate
7.5	glucose
67.	water and sodium sulphate

The method described will produce a mold of an even thickness, whereas if the metal die is dipped in the collodion, it will take many applications and its thickness will be uneven.

The metal die, with its cellulose crown, is placed in boiling water. The metal will melt quickly leaving a cellulose nitrate shell which is thin, transparent, and inflammable. If there are specks of metal left in the mold, they may be easily removed.

7. *Casting*—a) Place the mold on the amalgam die with its platinum matrix in place. The hole in the mold should be alined with the hole in the die. Inasmuch as the mold was made from an impression of the original die, it will be in its proper relationship to the die.

b) With a safety razor blade cut away the labial surface of the mold until it resembles an open-face crown. This labial opening will serve as an ingate through which the crown is cast.

c) The porcelain must be of a consistency that will flow freely when vibrated.

d) A rather large quantity of the gingival shade is placed in the labiogingival portion of the mold and the die vibrated with the side of the porcelain carving instrument until the porcelain has run down around the linguo-gingival section of the mold filling the shoulder.

e) The surface moisture is removed with narrow strips of blotting paper.

f) Before any additional porcelain is added, it must be vibrated again and the contained moisture brought to the surface. It is well to remember that the condensed porcelain should not be too dry while more is being added. To prevent the entrapping of air and to obtain maximum condensation, thorough and repeated vibration is important.

g) According to the position of the shades in the tooth to be reproduced, when enough gingival shade is in place the incisal shade is added. As the mold becomes filled and more of the moisture is removed, it must be vibrated more often and a smaller amount of porcelain added each time.

h) When it is impossible to extract any more moisture and when the mold is completely filled, the excess porcelain around the periphery of the ingate is removed with the carver and the labial porcelain burnished and brushed with a long-haired sable brush.

i) If the extension of cellulose beyond the apron of the matrix is cut away, the mold with the matrix can be removed more easily from the die. The semi-rigid cellulose nitrate mold will allow the removal of the built-up crown with the platinum matrix, with little possibility of strains occurring.

8. *Firing Technique* — The crown may be fired either in a cold or preheated furnace. If a cold furnace is used, the crown is put on a suitable sagger and placed in the furnace. The door is left open and the current is turned on; when the pyrometer reaches 400° F. the cellulose nitrate mold burns away with a slight explosion: at 700° F. the piece has burned white. The door is then closed and firing is carried on as usual. It should be fired to a high biscuit; however, if a preheated furnace is employed, the crown on its sagger is placed on the apron of the furnace near the door. When the pyrometer reads 100 degrees less than the fusing point of the porcelain being used, the door is opened. When the mold has completely disappeared, the sagger is moved nearer the center of the door until the crown has burned white. The crown is then placed in the furnace, the door closed, and the crown fired to a high biscuit.

After firing, if any checks should appear, porcelain of the proper shade is added and the crown is fired again.

9. *Adjusting the Biscuited Crown*— If no checks should appear after the first firing, the crown may be ground to fit: that is, the contacts established, brought into alinement labially and incisally, and the bite relieved. The excess of porcelain at the shoulder and the platinum apron are ground away until a good joint is secured.

10. *Finishing*—Any irregular markings may be placed in the labial surface with a stone. The crown is cleaned by scrubbing and then glazed.

Comment

This technique may be carried out in a semi-direct manner: The pattern may be obtained direct from the mouth by adjusting a celluloid crown form that has been filled with wax. The increase in size may be accomplished by the addition of wax after the crown form has been placed on the die. The other steps are the same as have been described. The biscuited crown is ground to fit in the mouth.

A Cast Porcelain Wing Bridge Technique

1. The wax patterns for the abutment and pontic are treated as separate units. The abutment is built as though it were a jacket and the mesial and distal increase added after its pontic has been carved. Inasmuch as the pontic lacks the hollow core present in the abutment, its increase in size should be about .5 mm.

2. Separate metal dies are poured for each unit and their respective cellulose molds are made.

3. The matrix is constructed for the abutment. This bridge is reinforced by wrapping a piece of 10 per cent iridioplatinum wire, 24 or 26 gauge, around the amalgam die. The portion of the wire that encircles the die is made flat with stretching pliers. The ends of the wire are twisted together to serve as a tongue to strengthen the pontic.

4. The abutment mold is split down the side toward the space to accommodate the platinum tongue. The labial ingate is cut, and the crown is cast and fired to a high biscuit bake.

5. Holes are cut in the mesial and distal surfaces of the pontic mold corresponding to the position of the platinum tongue. The shaft of a long bur is placed through these holes. The bur shaft is oiled and fastened to the mold with some collodion. The labial ingate is cut and the mold cast. The bur shaft is removed and the pontic fired.

6. The abutment and pontic are ground to place. The platinum tongue is put in place through the space in the pontic.

7. The units are held together by placing collodion at the labial contact; the opening in the pontic is filled in with porcelain, and the lingual contact is reinforced with porcelain.

8. The bridge is fired to a high biscuit, any changes necessary are made, and glazing is then done.

A Cast Porcelain Pontic

1. The pattern is made of wax, being carved directly on the model. The occlusal-gingival dimension must be increased at least 2 mm. In other words, the bite should be opened about 2 mm. When this pattern has been removed from the model the contacts should be increased by the addition of 1 mm. of wax to both mesial and distal surfaces. The pontic may be made either as a saddle or a cone type by the correct shaping of the pattern.

2. When the low-fusing metal die has been made, a groove is cut in the lingual surface, beginning at a point midway between the labial and lingual surfaces and carrying it around to the opposite side. It should be placed about one third of the distance from the occlusal. A hole is drilled in the center of the groove.

3. When the mold has been made, a hole is cut in the lingual surface to correspond to the one in the die. A metal pin, about gauge 14, is inserted in this hole and carried to about 2 mm. from the labial surface. The pin is secured to the lingual surface of the mold with some collodion. The ingate may be made by cutting away some of the labial surface, the occlusal surface, or by using the open gingival end. The pontic is cast; the pin is removed and porcelain is fired.

4. When the pontic has been ground to fit and glazed, the lingual groove is deepened and enlarged with stones. The groove is waxed up to come in contact with the abutment. A sprue-

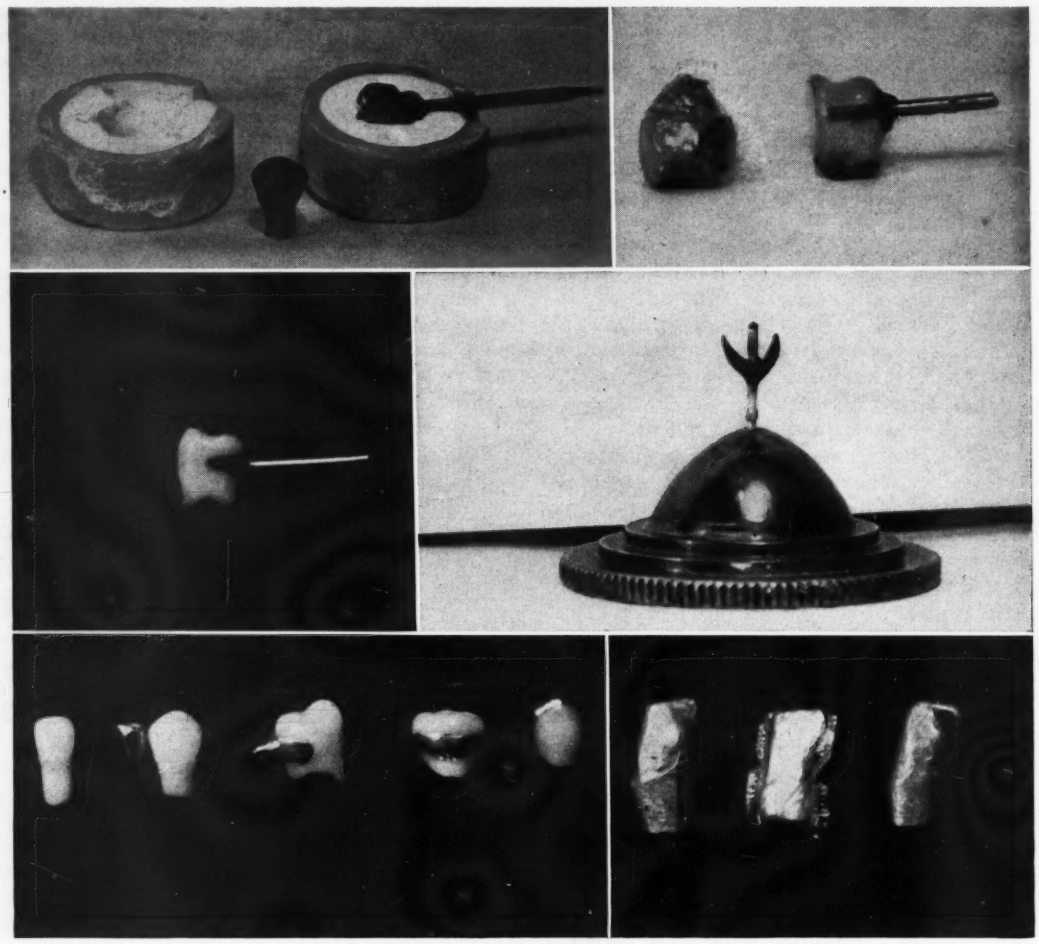


Fig. 12 (Top left)—Wax pattern of a pontic with additions; split plaster mold with wax pattern in place.
Fig. 13 (Top right)—Low-fusing die wrapped with collodion; cellulose mold with pin in place.
Fig. 14 (Center left)—Glazed pontic waxed with pin in place.
Fig. 15 (Center right)—Wax, with combined pin and sprue, ready to be invested.
Fig. 16 (Bottom left)—Cone type incisor pontic; cone type bicuspid pontic with inlay abutment; saddle attachments; saddle type bicuspid with occlusal attachment.
Fig. 17 (Bottom right)—Amalgam die with distal bulge removed and wax pattern in place; low-fusing die with collodion in place and seams formed; cellulose mold with its ingate in place on amalgam die.

pin is passed through the wax into the hole in the body of the porcelain. When it is cast in gold, the end of the sprue wire acts as a pin for the retention and support of the pontic; and the gold band, which encircles half of the porcelain, acts as a crib. With this type of retention, it is possible to have a pontic with both the gingival and occlusal surfaces of porcelain. By changing the position of the pin, one can construct a tube tooth, open at either or both ends.

A Cast Porcelain Inlay for a Class IV Cavity

1. The preparation of the cavity for a cast porcelain inlay should be designed so as to permit the taking of a band impression.

2. A wax impression and bite, together with the band impression, are all the data needed.

3. An amalgam die is made and the model poured and articulated.

4. The surface of the die opposite the location of the cavity is tapered incisally and any labial or lingual bulges are ground away. The prepared die should resemble a die for a jacket crown except that the cavity surface and its margins are intact.

5. A wax pattern is carved on the model. The margins should be somewhat over-extended, the incisal angle made more pronounced, and the contact over-built after the die has been removed from the model.

6. A low-fusing die is poured into an impression of the wax pattern and the amalgam die. The die is treated as though it were a jacket preparation. The matrix is carried around the entire circumference of the amalgam die. The joint is made along the incisal edge and the opposite interproximal surface.

7. The cellulose nitrate mold is made and the ingate is cut on the labial surface.

8. Before the mold is placed on the die and matrix, the lingual surface of the matrix is filled with porcelain. This is done to be sure that the porce-

lain will reach the portion of the cavity most remote from the ingate.

9. When the mold is in place, the inlay is cast.

10. The mold, condensed porcelain, and matrix are removed together.

11. The inlay is fired to high biscuit by starting it in a cold furnace.

12. After it has been fired, the contact is relieved and the marginal excess is ground away.

13. It is cleaned and glazed.

14. The platinum is removed and the cavity surface etched.

Conclusions

1. The technique described here for the use of cast porcelain is no more complicated than any indirect inlay technique; moreover, it should not consume any more time. It is so simple that any assistant of average ability can easily learn to carry through the procedure, although to those operators with artistic ability, it will be satisfying to do so themselves.

2. With this procedure, it is possible to cast a variety of pontics, for which many different types of attachments may be designed.

3. By casting a bridge, the stuck-together appearance may be prevented and the pontic and abutment may be made to look more like individual teeth.

4. Larger inlays or full crowns may be completed with only one build-up.

5. From the nature of the operation, it would seem that the construction of porcelain restorations should be carried out in the individual laboratories of dentists.

6. Porcelain, as a means of restoring lost tooth structure, has so many advantages over other materials, it seems regrettable that it is not at the command of every operator and within the reach of every patient.

538 *Woolworth Building.*

Adaptation from the Literature

The Selection of the Anesthetic in Cases of Fracture of the Jaw

[Weisengreen, H. H.: Journal of Bone and Joint Surgery, 17:4, 1005 (October) 1938. Recounted in Anesthesia and Analgesia, 19:64 (May-June) 1940.]

The area involved in maxillary fractures usually affects the alimentary and respiratory tracts or at least one of them. The anesthetic of choice in these cases, therefore, is one that will not interfere with the normal functioning of these tracts. The anesthetic should give complete effectiveness during operation without increasing the discomfort or suffering of the patient.

Considerable controversy has arisen over the advisability of wiring the jaws while the patient is under a general anesthetic in cases in which the mandible has been fractured and immobilization by wiring is indicated. Those who favor this method say that immobilization can be done safely if the depth of the anesthesia is not too great. Those opposing this method cite near fatalities encountered because of vomiting and swallowing of the tongue in addition to difficulties of obtaining and maintaining satisfactory occlusion.

Indications for Local Anesthesia

Local anesthesia is preferred when there has been no untoward lapse of time in cases of uncomplicated fractures. A pre-anesthetic medication is advised and a few drops of 1 per cent solution of procaine hydrochloride injected high in the muco-buccal fold in the operative area.

Advantages of Local Anesthesia

Local anesthesia in suitable cases is (1) completely adequate; (2) provides essential and efficient cooperative measures; (3) leaves the patient free to change positions at will, thereby permitting the patient to assist in supplying countertraction when needed; (4) complete muscular relaxation is had which is necessary in securing good alinement of fragments.

Indications for General Anesthesia

General anesthesia is necessitated in fracture cases (1) in which initial treatment has been delayed until fibrous union has taken place; (2) when extensive surgery of the bone and soft tissues is required; (3) when infection has already occurred (in which case local anesthesia is absolutely contraindicated).

General Anesthetics Employed

The general anesthetics employed in cases of fracture are: ether, rectal avertin, and a combination of avertin with procaine hydrochloride. Weisengreen prefers to use rectal avertin because (1) the anesthetist is out of the operative field; (2) respiration is regular and normal; (3) reduction is accomplished without untoward results which follow the use of an inhalation anesthetic; (4) there is an early relaxation of the muscles of the jaws and tongue; (5) the supplemental use of an inhalation anesthetic is not needed; (6) the dangers of explosion connected with the use of the cautery are obviated.

Treatment under General Anesthesia

When conditions indicate the use of a general anesthetic and immobilization by wiring, Weisengreen favors the placing of eyelet wires in their respective positions but not completing intermaxillary fixation until the patient has regained consciousness and has fully recovered from the effects of the anesthetic.

A Preventive Method for the Maintenance of Space

BERNARD Z. RABINOWITCH, D.D.S., Los Angeles

EARLY LOSS OF deciduous teeth as a result of extraction or of ectopic eruption of the permanent teeth presents a problem of preventive orthodontia which should be clearly understood by every general practitioner doing dentistry for children. Under normal conditions the permanent tooth will not erupt until it is ready, although one often finds teeth that erupt slightly ahead of schedule when a deciduous tooth has been lost too soon.

Nature, in allowing for the development of the face and jaws, has allowed for a three-dimensional growth; downward, outward, and forward. The only dimension of particular concern in this problem is that of the outward or lateral growth. In the anterior region at about the age of 3 years, the denture grows laterally in anticipation of the function it will have and of the space needed for the normal eruption and occlusion of the incisors. Inasmuch as there is no lengthening of the arches in the bicuspid area, Nature has taken the precaution of making the deciduous molars, which the permanent bicuspids follow, larger in size by about one-third. This, I believe, is to allow for the movement of the posterior teeth forward under the forces of mastication, so that by the time the tooth erupts, after the deciduous tooth has been lost, the space that allows for the normal first permanent molar relationship will be closed. When the remainder of the space is taken up by the cuspid at the time of eruption, good contacts with the adjacent teeth are insured. It will be noted that growth is spasmodic and the cuspids may often assume their position because of the lateral growth that takes place in that area.

Ectopic eruption takes place in the lower cuspid most frequently because of the lack of growth allowing for the normal eruption of the lateral. This causes the lateral to exert pressure against the cuspid as it erupts, thereby losing its space in the deciduous arch. Powerful forces of mastication coupled with insufficient vertical growth sometimes cause the first permanent molar to move anteriorly into ectopic eruption, leading to the premature loss of the second deciduous molar.

DIGEST

1. Preventive orthodontia is urged in cases of premature loss of a deciduous posterior tooth (a) in order to prevent closure of the space; (b) to insure the normal development of the arch, and (3) to prevent ectopic eruption of the permanent tooth.

2. An appliance is not needed for the premature loss of a deciduous incisor. Harmful tongue habits, however, must be curtailed.

3. A space maintainer is indicated when eruption of the permanent tooth is not to take place for six months or more.

4. In the construction of a space maintainer, allowance must be made for lateral growth.

5. An indirect technique is described for the construction of a maintainer which is composed of a wire crib, contoured to fit the gum, and a metal band, welded to the crib and contoured to fit the tooth to be banded in placing the appliance. The permanent tooth erupts into or up to the crib, at which time the appliance is removed.

When a deciduous incisor is lost as a result of a blow or caries the child should be observed to see that no habits, particularly of the tongue, develop which might result in malformation of the anterior region. Unless this habit is developed, or unless there are special esthetic considerations, no appliance will be needed.

When a deciduous molar or cuspid or any permanent tooth is lost, that space must be maintained or closure will usually result. In the construction of a space maintainer, therefore, the only allowance that has to be made is for lateral growth; the anterior-posterior growth may be disregarded. This especially holds true when the loss is that of a first deciduous molar and the cuspid has to be taken into consideration. In determining whether a space maintainer is necessary one must take into consideration the length of time before the permanent tooth will erupt. This can be done by roentgenographic examination as well as by checking on the eruption time. I believe a space maintainer should be placed if the tooth will not erupt for six months or more. A maintainer that is easy to construct, simple in its mechanism, and comfortable for the patient, may be constructed by an indirect technique to be described here.

Technique

Operators without welding equipment should use precious metal bands and wire because soldering of stainless steel is difficult and a special flux must be used. Heavier band material is also suggested. A band material of 0.18 by .006 gauge is recommended for the permanent molar; 0.15 by .004 for deciduous molars; and 0.030 gauge wire for the crib.

Fifteen minutes is allowed for the first appointment. Carefully check the tooth to be banded and care for any defects. Slight decalcifications may be cared for by the application

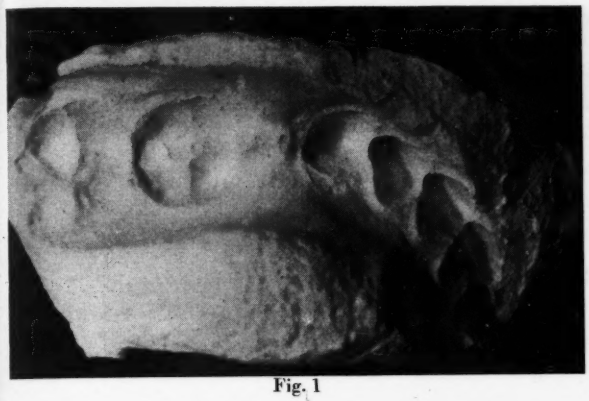


Fig. 1

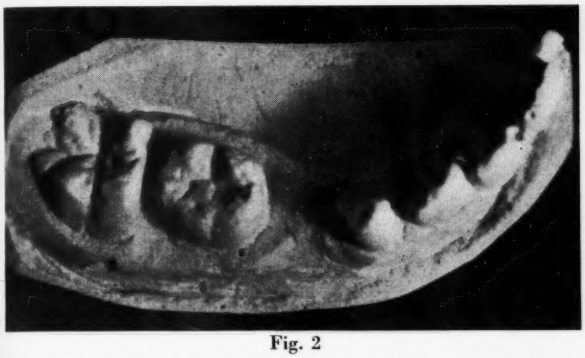


Fig. 2

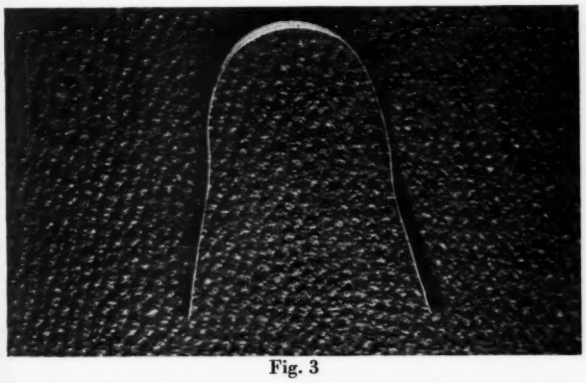


Fig. 3

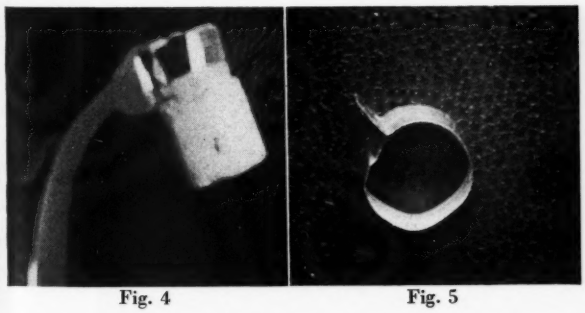


Fig. 4

Fig. 5

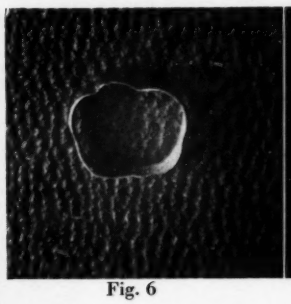


Fig. 6

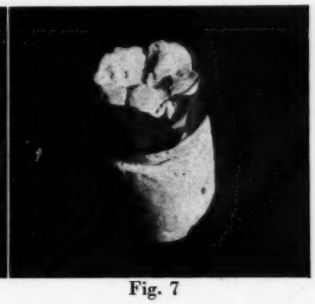


Fig. 7

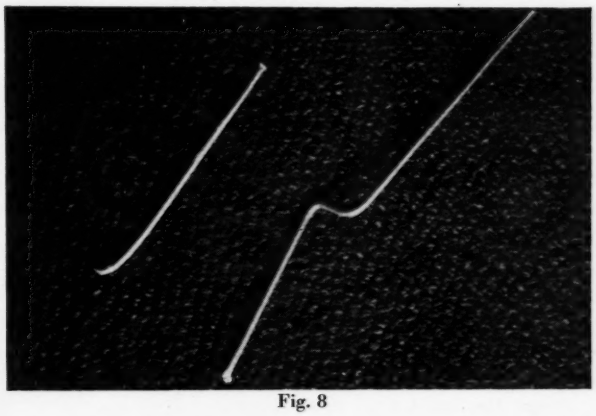


Fig. 8

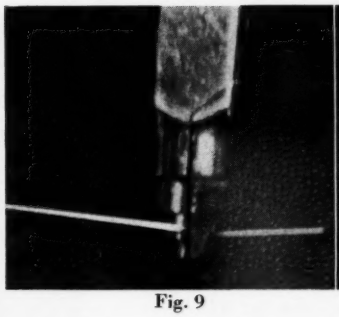


Fig. 9

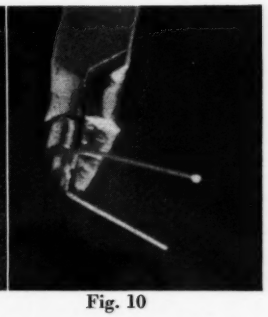


Fig. 10

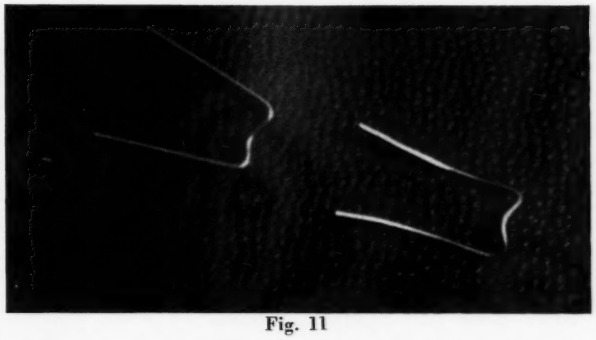


Fig. 11

Fig. 1—Impression.

Fig. 2—Posterior tooth on cast trimmed slightly below gum line, following contour of tooth.

Fig. 3—Band material contoured.

Fig. 4—Band material drawn around tooth with band-forming pliers.

Fig. 5—Band contoured to fit die.

Figs. 6 and 7—Band welded to die.

Figs. 8 and 9—Wire bent against beaks of angles of wire-bending pliers.

Fig. 10—Pliers moved on wire to make a curve bend between the two angle bends and thus obtain the crib.

Fig. 11—Crib contoured to fit gum bucco-lingually and mesio-distally.

of Howe's ammoniacal silver nitrate and reduced with eugenol.

An impression is taken of the area involved, preferably in plaster, and poured in stone (Fig. 1).

Forty-five minutes is allowed for the laboratory procedure which follows:

1. Trim the posterior tooth on the cast slightly below the gum line following the contour of the tooth (Fig. 2).

2. Contour the band material with Johnston pliers (Fig. 3). This may be done by pulling the band material through the beaks of the pliers with the inner surface of the band material against the convex beak.

3. Bring the band material around the tooth to be banded and draw it tight with band-forming pliers (Fig. 4).

4. Weld or solder.

5. Trim on the mesial and distal of the gingival border to conform to gingivae and contour the band to fit the die (Fig. 5).

6. Bend the slight excess over against the band and weld (Figs. 6 and 7). This step may be eliminated by those using precious metal and the soldering technique.

7. Place the wire in Young's wire-bending pliers and bend one side against the angle beak and the other side against the curved beak (Figs. 8 and 9).

8. Move the pliers on the wire so that the next bend will be against the angle beak of the pliers resulting in a curve bend between two angle bends, thereby obtaining the crib (Fig. 10).

9. Slightly contour the crib to fit the gum both bucco-lingually and mesio-distally and to fit the lingual and buccal surfaces of the banded tooth (Fig. 11).

10. Flatten the ends of the wire so that a larger surface may be had to weld to the band.

11. Polish the weld joint on the band and weld the crib to the band. Polish all weld spots and smooth the appliance (Figs. 12 and 13).

Thirty minutes is allowed for the second appointment when the patient's teeth are carefully cleaned with pumice and hydrogen dioxide. The area is then isolated and the tooth is dried, sterilized with phenol, and again carefully dried. The space maintainer is then cemented with red copper cement and the patient is

(*Continued on page* 281)

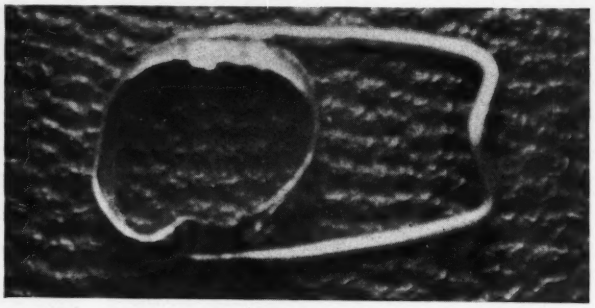


Fig. 12

Fig. 13

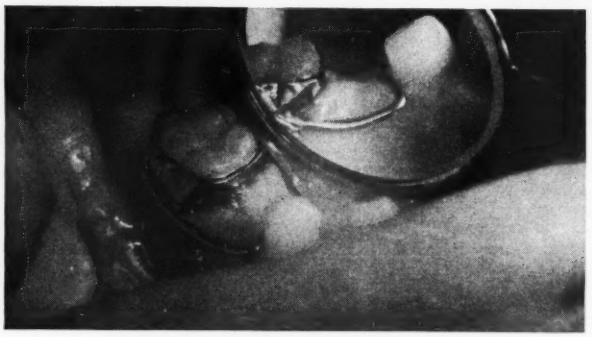


Fig. 14

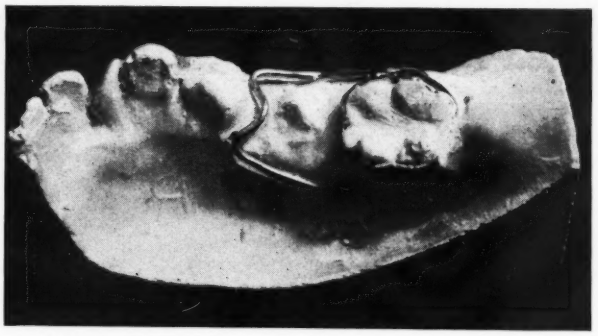
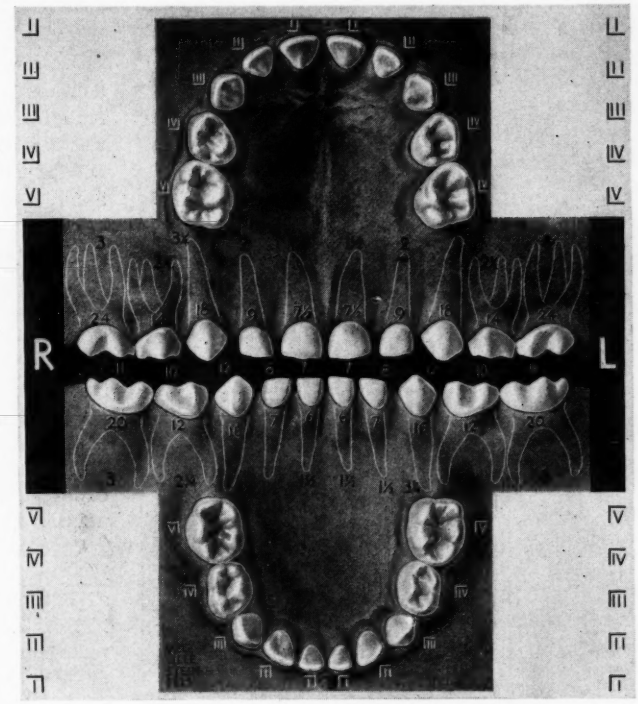


Fig. 15

Figs. 12 and 13—Crib welded to band and appliance in place.
Fig. 14—Space maintainer cemented with red copper cement.
Fig. 15—Model of tooth erupting into crib.

RYAN EXAMINATION, TREATMENT, AND EDUCATIONAL RECORD FOR DECIDUOUS TEETH



Key:

BLACK numbers at root-ends indicate age in years at which roots are usually completed.

WHITE numbers at occlusal and incisal grinding and cutting edges indicate age in years at which teeth are usually lost.

SHADED Black numbers at gingival (gum line) indicate age in months at which teeth usually erupt.

DENTISTS:

How often do mothers ask you when the deciduous teeth erupt and when they are lost? Would the above chart giving these facts improve the dental education of the patient?
This chart will be reprinted if there is sufficient demand. The size would be the standard 5″ x 7¾″.

Caries of Unerupted Teeth

GEORGE A. SWENDIMAN, D.D.S., Grand Forks, North Dakota

DESPITE THE ENORMOUS amount of research that has been done since 1882 when Miller called attention to the organism *B. acidophilus odontolyticus* as one possible cause of dental caries, the true and specific cause remains to be discovered. Many theories have been advanced and proofs submitted, but in a recent compilation of most of the experiments that have been made to date, there is so much contradictory evidence that it is apparent the cause of the disease dental caries is still a secret.

The theory advanced by the majority of investigators is that mucin is deposited on the surfaces of the teeth by the saliva, or that food débris collects and within is embodied the *B. acidophilus odontolyticus*. The *B. acidophilus odontolyticus* is said to have the property of splitting carbohydrates and liberating a high concentration of organic acids, bringing about the decalcification of the hard enamel and the lime salt content of the dentine.

Recently Doctor Leonard S. Fosdick, of the Northwestern University Dental School, reported that it is the sugar one eats that causes decay. He contends that sugar taken in the mouth produces an acid which, with bacteria normally present, causes tooth decay.

To support these theories the point has been stressed that the teeth must be erupted, bathed in and exposed to the action of saliva. Clinical evidence seems to support these theories.

The statement that a tooth must be erupted, bathed in and subjected to the action of saliva is refuted, however, by two cases of impacted teeth embedded in the osseous structure of the mouth which came under my observation.

DIGEST

The prevalent theory that a tooth must be erupted, bathed in and subjected to the action of saliva in order to become carious is refuted by the evidence of two cases cited in which impacted teeth embedded in the osseous structure of the mouth showed roentgenographically (and clinically upon removal) extensive caries, causing devitalization of the pulp.

The author suggests that perhaps there is a change in all the fluids of the body which produces a peculiar type of enzyme with the power to destroy tooth structure, but that this enzyme is more evident in the saliva than in other fluids.

If research yields the discovery of a caries-producing enzyme, then it is likely that a counteracting substance will be found.

Report of Cases

Case 1—A farmer, aged 70, wore full upper and lower vulcanite dentures. He said his teeth were lost as a result of pyorrhea and that he had had only a few restorations. He complained of swelling and soreness in the posterior part of the palate, and he had a temperature of 101°.

Examination disclosed that the soft palate was considerably swollen on the right side. There was the appearance of quinsy. The patient said that he had enjoyed good health for many years but when he was a young man he would have a sore throat at intervals during the winter months.

The patient complained that he had had pains in the region of the maxillary third molar before the palatal swelling took place. Incision was made in the soft palate tissue and the pus evacuated. Acute symptoms subsided in a few days.

Roentgenologic diagnosis had not been made of the mouth prior to extraction of all the teeth and the insertion of the dentures. After the acute symptoms had subsided, therefore, a roentgenogram of this region was taken, which disclosed an embedded third molar with the appearance of caries affecting the crown (Fig. 1).

Upon removal of the embedded third molar the clinical observations corresponded to the roentgenographic evidence in that there was extensive caries extending to the pulp, causing its devitalization without any painful symptoms until the occurrence of the acute abscess in the tuberosity region of the maxillary bone, with pus escaping into the tissue of the soft palate.

Case 2—A woman, aged 42, in good health, an executive and secretary for a large business women's organization in New York City, in 1922 had had a roentgenogram (Fig. 2) taken of the upper right impacted cuspid, which showed normal formation of the crown and some resorption of the root of the upper right deciduous cuspid. The patient did not want to have the cuspid removed because there were no disturbing symptoms. The deciduous cuspid was vital.

In 1930 another roentgenologic examination was made. Fig. 3 shows the extent of caries at this time. The patient still refused removal of the impaction because there were no disturbing symptoms. The deciduous cuspid was vital.

In 1935 roentgenograms were taken. No restorative service was needed at this time. The deciduous cuspid was still vital.

Roentgenograms (Fig. 4) of the impacted deciduous cuspid, taken at different angles, show extensive destruction of the crown by caries. There has been virtually no further absorption of the root of the deciduous cuspid which responded to vitality tests. There were no symptoms of pain or

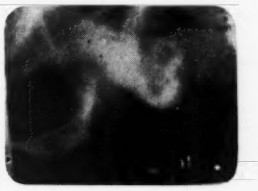


Fig. 1—Embedded third molar with appearance of caries affecting crown (Case 1).

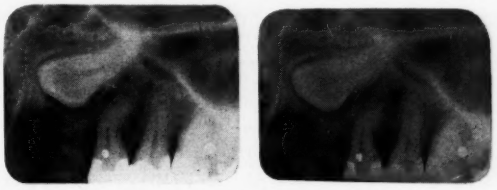


Fig. 2—Upper right impacted cuspid showing normal formation of crown and some resorption of root of upper right deciduous cuspid. Roentgenogram taken in 1922 (Case 2).

Fig. 3—Roentgenogram (Case 2) taken in 1930. Note extent of caries.

Fig. 4—Roentgenograms of impacted deciduous cuspid (Case 2), taken at different angles. Note extensive destruction of crown by caries.

neuralgia. The impacted cuspid was removed as a preventive measure. On removal the crown of the impacted cuspid was found to be destroyed to the extent shown in the roentgenogram. The crown was completely hollowed, leaving a shell of the remaining portion of the enamel. The caries was of soft, leathery consistency, and was so extensive that its removal exposed the pulp.

Conclusion

It is my belief that teeth do not have to be erupted, in contact, and bathed in saliva to become carious, as evidenced by the roentgenograms of impacted teeth, embedded in the osseous structure of the jawbones.

It is known that the consumption of sugar changes the chemical balance of the blood. But, the farmer-patient had had little caries in the teeth that were erupted, and his teeth were gradually lost as the result of pyorrhea. His diet was plain and wholesome, consisting of meat, potatoes, home grown vegetables, and milk. He seldom ate pastry, cakes, cookies, candy, or used sugar. The second patient had no caries of the erupted teeth during the last five years of record. Her diet could be considered normal and adequate. The impacted cuspid was carious.

The fact that teeth embedded in the jawbone can be affected by caries would indicate not only a change of the consistency of the saliva and the blood by the intake of refined foods, and the lack of the necessary vitamins, but also a change in the other fluids of the body. This altered condition lowers the tone and resistance of all the tissues.

This change in the fluids of the body also tends to lower the resistance of the teeth to decay and probably produces a peculiar type of enzyme that has the power of destroying tooth structure. This enzyme would naturally be more evident in the saliva than in the other tissue fluids.

It is possible that a new approach to the cause of caries will have to be undertaken. Research may have to be directed toward the discovery of a possible enzyme that produces caries. If such a discovery is made, then it is likely that a suitable substance can be found that will counteract its destructive action.

First National Bank Building.

A PREVENTIVE METHOD FOR THE MAINTENANCE OF SPACE

(*Continued from page 278*)

warned against sticky, chewy substances and dismissed for two weeks when a check-up is made (Fig. 14).

Periodic check-ups are made as recementation is required, from every four to six months. Periodic roentgenograms are taken at the return visits.

The tooth usually erupts into the crib; however, the space maintainer is removed when the roentgenogram shows the tooth to be ready to erupt into the crib or part of the cusp erupted through the gum tissue (Fig. 15).

1908 *Wilshire Boulevard.*

The Editor's Page

WE SEE THEM everywhere—persons with retruded chins. The condition is one that does not endanger life or health but it certainly is disquieting to human happiness. There is associated with the retruded chin, in the minds of many people, the idea that it symbolizes lack of character. It is true that a lack is represented, but it is a lack in anatomic development and in no sense indicates an innate disturbance of personality. As the person grows and matures, however, his personality may be altered deleteriously, inasmuch as the deformity is a progressive one during the whole developmental period.

This abnormality, unfortunately, usually goes untreated. When treatment has been instituted, however, several methods have been employed: Orthodontia has been used successfully in the earlier years of life to correct the retruded chin. Some oral surgeons have used various types of osteotomy either through the horizontal part of the jaw or the ascending rami to lengthen or advance the mandible. This extensive cutting of the jaw substance is a procedure not without grave danger and must be considered radical surgery. Various forms of implants have been used, between the bone fragments to lengthen the mandible.

A conservative method has recently been described by two surgeons[1] of The Mayo Clinic who report a plastic procedure wherein grafts of cartilage or bone are utilized to build out the symphysis of the mandible, followed by the construction of a prosthetic appliance to place the teeth in proper occlusion and to improve esthetics.

The description of these classical underdeveloped lower jaws is given by the authors as follows: "Bilateral retrusion is characterized by posterior displacement of the entire lower jaw. Underdevelopment and recession of the symphysis accentuate the deformity. Occasionally the lower teeth possess a forward inclination, but those whose long axis is more or less vertical often come in contact with the mucous membrane of the anterior portion of the palate. When the defect is associated with mouth breathing, the upper anterior teeth are usually tilted forward, owing to a shortening and lack of development of the upper lip. . . ."

An outline of the exact procedure for the plastic correction of mandibular retrusion is herewith given:

1. A face mask is first made, upon which is molded in wax the form of the chin to be developed in the plastic reconstruction. This mold gives the surgeon an idea of the amount of graft required and serves as a pattern. Either costal cartilage or bone from the crest of the ilium is used.

2. A small incision is made in the skin in the submental region.

3. The graft, which has been cut to the desired contour, is introduced through the incision in the submental region and is inserted over the symphysis where it is immobilized in position by external pressure, in direct proximity to the bone.

4. One thickness of cartilage is often insufficient, and in such cases two or three pieces are fastened together with catgut.

5. Grafts of large size frequently need internal as well as external fixation. These are made by fastening the graft directly to the bone of the jaw, heavy chromic catgut being passed through holes drilled in the body of the mandible.

6. Most patients with retruded chins have marked distal displacement of the lower teeth and a correction of deficient substance in the symphysis would do nothing to improve the esthetics. Furthermore, the cartilage or bone graft causes the lower lip to be drawn back tensely, increasing the facial deformity.

This retraction of the lower lip is corrected by incising through the labial mucosal fold down to the depth of the graft and inserting in a *skin-lined* pocket a prosthetic appliance.

The technique for this part of the procedure is described as follows:

"To free the lower lip from its attachment to the lower alveolar process, sharp dissection is employed and an incision is made through the mucous membrane of the labio-alveolar sulcus from one bicuspid region to the other. This incision is carried down between the alveolar process and lower lip to the cartilage implant, care being taken not to expose the graft. The result of this procedure is the creation of a pocket which must be lined with skin for the reception of the artificial appliance." In other words, after skin is grafted into this artificially created sulcus the appliance rests between the mucous membrane of the lip and the jaw in a skin-lined pocket.

[1] New, G. B. and Erich, J. B.: Retruded Chins, J. A. M. A. 115:186 (July 20) 1940.

Color In Dentistry

WILLIAM ARTHUR MENDELSOHN, Chicago

COLOR IS SELDOM considered by the average dentist from the psychophysical aspect; nevertheless color appreciation and differentiation do enter into the average practitioner's daily practice. He depends on color interpretation and differentiation for the matching of the shades of teeth; he depends on color sense in the selection of porcelain for mixing; his perception of color differentiation enables him to detect early changes in both teeth and tissue, and diagnostically, he notes such color changes in his records.

DIGEST

1. The physics of the phenomenon of color is discussed as the quality of an object which depends on the light by which an object is seen for the appearance it produces.

2. Pigment, the organic coloring matter on or in an object, is not a color itself but has only a faculty for reflection of certain wave lengths of light and absorption of others. Pigment is a fixed factor; light is a varying factor.

3. To interpret and recognize basic colors, the conditions of light must be constant; that is, light must be so balanced in wave lengths that it is truly equichromatic or so-called white in nature: it must contain an equal proportion of all the seven different wave lengths that make up white light.

4. Certain wave lengths have neutralizing effects which alter the visual impressions of color.

5. Suggestions are made regarding practical applications of color and light as their functional and decorative needs are considered.

Color

Color is a quality of an object other than form. In the strictest sense the color of an object is dependent on the light by which the object is seen. It may be said that although color is a quality of any object, it is more strictly speaking a property of the light by which the object is seen. Pigment, the organic coloring matter that is deposited on or in an object, is selective to the degree that it will reflect certain wave lengths of light and absorb others. If a pigment has the property of being able to reflect only red light, for instance, then any light that strikes it which contains no red wave lengths will be absorbed, and inasmuch as there is no red for reflection by the pigment, the color to the observer will be anything but red. It may appear even as black, but it will certainly not appear as red. On the other hand, when light that contains red wave lengths strikes the pigment, the red will be reflected in preponderance and the pigment will appear as red. It must be recognized, however, that few pigments are pure in color to the extent of being absolutely monochromatic; thus in addition to the predominant wave length that it reflects, other wave lengths will likewise be reflected in varying degrees.

One must come to appreciate, therefore, that a pigment has only a peculiar faculty for reflection of certain wave lengths of light and is not in the strictest sense a color. It only appears as a color when light of certain wave lengths strikes the pigment. An object is or is not a certain color as the light by which it is seen is or is not of certain wave lengths.

One who wishes to understand color appreciation and interpretation must also realize that wave lengths of one character have the power or faculty of neutralizing wave lengths of another character. This is especially true with so-called complementary colors, such as red wave lengths of light which will neutralize blue. A retinal impression of blue, for instance, may be entirely neutralized by a preponderance of yellow to the extent that the blue will be absolutely unrecognizable.

Even as we consider and think of these elementary facts about color, we learn that inasmuch as the pigment is usually a fixed factor, and light is a varying factor, we can only interpret and recognize colors when the conditions of seeing (the light) are constant. We must also understand that when it is one's object to learn what the basic property of any pigment really is, it is necessary to view the object containing that pigment under light that takes nothing from the true property of the pigment nor adds anything to the true property of the pigment. Light must be so balanced in wave lengths that it is truly equichromatic, which means that the light must be so-called white in nature; that is, it must contain an equal proportion of all the seven different wave lengths that make up white light.

Psychologic Effects of Color

In an attempt to neutralize light and lighting for the purposes of aiding in color interpretation for the better practice of dentistry, one must give thought to checks and balances so as not to correct the situation for one phase of the dentist's need and upset another phase.

Any consideration of the color problem in dentistry is related to light itself; therefore, the light to be used in the office together with the physical and psychologic aspects of light must be considered. Often we read about and experience psychologic effects of light of different color pre-

ponderance. Science has proved that red as a color will and does cause an emotional reaction akin to excitement; blue creates the opposite, because it is soothing and relaxing; whereas green tends to produce the impression of coolness. It is admitted that the psychologic effects of colors are still in the stage of investigation; nevertheless certain results have been observed and noted. They may be listed as shown below.

COLOR	*EFFECT*
Red	Exciting—Warmth—Activity
Blue	Relaxing—Calmness—Coldness
Green	Soothing—Coolness—Comfort
Yellow	Gayety—Brightness—Alertness
Brown	Emetic—Distasteful—Dullness
Black...(lack of color)	Sadness—Unclean—Fear
White...(combination of all)	Cleanliness—Completeness
Grey	Dull—Depressing—Old

The psychologic effects listed, it must be recognized, are not produced by these colors correctly combined with others or with correct casts; for example, grey with enough pink in it may be warm; or brown with enough gold may be warm and rich. But they (the unpleasant reactions listed) are the effects produced when the one single color seems to predominate. The emotional elements related to these colors should receive some thought when the dentist is considering the painting and decorating of his offices and reception room, because we have all experienced the effect of walking into a room that produces a feeling of coldness, a room that makes us feel hot and others that in varying degrees are uncomfortable, forbidding, sad, gay, relaxed. All people in a given environment have established a set of expectancies. By that it is meant that people expect to find certain things in certain places and expect to feel a certain way under given circumstances. It is expected, for example, that the office of a physician or dentist will be clean; therefore, people expect it to be bright and light.

Lighting for the Psychologic Effect

The recent introduction of so-called daylight units into lighting has upset the expectancy of many a patient who has entered a dental office so lighted. Fluorescent lighting has a definite place in dentistry and is highly desirable if used in accordance with the needs of the dental office. But the indiscriminate use of such a neutral light will and does upset the expectancy and causes reactions that the dentist and physician should prevent.

No dentist, no matter how little he knew about light and color, would think of lighting his operating room in red. It is hardly necessary to imagine the effect on a patient who enters an operating room so lighted. It can be equally as upsetting to destroy the normal expectancies of a patient by introducing any radical change without consideration of its effect. The newness of fluorescent lighting will result in its recommendation by ambitious lighting companies without an honest consideration of needs. The true need and place for this new and highly efficient lighting modality will, therefore, be considered. It is admitted without argument that this type of lighting is neutral to a high degree and as such presents the finest type of light for color recognition, color matching, and color mixing that the science of lighting has so far produced. On the other hand, what is the effect when it is used without discrimination for general illumination? First, we must recognize that the standard of expectancies may be upset by a light that is lacking in warmness, lacking in the normal attribute of glowing which we expect to find in a normal room. Inasmuch as the light from fluorescent lighting units is far richer in blue than we have become accustomed to find in a lighted room, the room immediately takes on the aspect of being cold. The light of the fluorescent tube, lacking the preponderance of yellow, which we have learned to expect, does not appear to be bright, but on the contrary, leaves the impression one associates with the cold blue of a mid-winter day.

For the dentist's or physician's office as a general lighting unit the fluorescent light presents an even more serious objection. It upsets in no small degree the patient's expectancies as related to the coloring of other persons in the room. The light, lacking the normally expected amount of red, makes the lips appear less red and more blue; it makes cheeks appear pallid; and the expected and desired appearance of ruddy and glowing health is upset. If the patient sees others who look sickly the effect is to produce a feeling of sickliness within himself and certainly such a feeling is to be prevented. One has only to look into a mirror at his own image under fluorescent light to notice the change in appearance this neutral light creates. There is little natural light that is truly neutral, and our expectancies so far as appearance is concerned have been built on the predominantly red and red-yellow glow of the sun and ordinary incandescent light, which in wave length characteristics approximates the lighting of past centuries.

Conclusion

The solution to the problem of light and color is not after all highly complicated. It requires mere recognition of the basic needs and the introduction of the means to fill the needs. The problem from the physical and psychologic aspects of color and light may be set forth:

DECORATION

1. Use colors that harmonize pleasingly.

2. Use no predominating color that produces an undesirable emotional reaction, such as emetic and depressing colors.

3. Color may be introduced in the operating room, but it should always be of the lightest pastel shades, and the impression should always be one that is related to white.

LIGHT

1. Illuminate in accordance with the needs for seeing and the maintenance of the warm effect expected by the patient.

2. Light the operating room to present the impression of being light rather than lighted.

3. Use specialized illumination for specialized needs, such as fluorescent lighting in the dental office for the matching of shades of teeth, color mixing, and color recognition.

4. Use decorative light only in the reception room.

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NOTES ON THE *Cuff*

Streamlined Therapy . . .

The new National Defense Taxes have been reflected in the price of almost all "bad-habit" luxury articles —everything except chewing tobacco, but now that chewing tobacco has found a place in the dental armamentarium, we may expect the price of a plug of Climax or a package of Beechnut Scrap to rise to the level of pharmaceutical products. A Canadian dentist, Doctor W. J. Linghorne, is reported to have observed that chewing tobacco is a natural occlusion-relieving-and-grinding agent and that he who chews tobacco, although he may have stained and yellow teeth, brown tracks at the angles of his mouth, yellow-brown splotches on his shirt front, will be free from the ravages of periodontal disease. It seems that "eating tobacco," as some of my fishermen friends call it, contains an abundance of grit, usually in the form of sand. Tobacco chewers, by the abrasive action of this grit, are able to correct their own traumatic occlusion rather than undergo the expensive grinding procedures by periodontists.

It seems to be a fact that tobacco chewers are often free from tooth decay and that they present well developed jaws and healthful supporting tissues. Whether the tobacco-chewing makes these men so healthy from a dental standpoint may represent the old analogy of the cart and the horse. It may be that the robust fellows are the only ones who can chew tobacco, and that their natural constitutional superiority which allows them to be quid munchers also gives them strong resistance to dental disease.

How often we return to the ways of our fathers! The sawdust filled box and the brass spittoon may return streamlined and chrome-plated from the limbo of Americana, to become hygienic adjuncts. Our fathers and our grandfathers chewed tobacco because they liked the slosh and taste and enjoyed squirting a brown liquid trajec-

tile at both moving and inanimate things. They chewed because they liked it. But if we become tobacco chewers, it would be because it is supposed to do us some good—like eating spinach and taking setting up exercises. The zest is gone when we do things with slavish purposefulness and to improve the hygienic quotient. I shudder in anticipation of one day perhaps having to write my first prescription for tobacco chewing in the therapy of traumatic or traumatogenic occlusion.

Relativity . . .

An item is offered here that would look at home in the pages of our illustrious contemporary, *The New Yorker*: A New York dentist had some trouble (of a kind familiar to all dentists) with a fixed bridge. The bridge had been in service since 1929 but recently exhibited a fracture. The dentist was properly distressed and anxious to know whether the material was at fault, whether the stresses were misplaced, or whether the soft bread the patient had been eating (all patients crack their bridges on soft bread) may have been somewhat on the hard side. This is the note the dentist wrote to his laboratory:

"The enclosed bridge which was made in 1929 has broken through the solid portion of the casting. This has happened in several other cases. Can you tell me what might be the cause?"

To this note of inquiry the technician penetratingly responded:

"Dear Doctor:

"So the Bridge for Mr. G. was made in 1929 and it broke now in 1940! Too bad!

"I wonder how many pair of shoes Mr. G. wore out since? How many pair of trousers, shirts, socks, etc. etc.

"In 1929, I remember, not only tiny bridges were broken but big fortunes were smashed to pieces.

"And since 1929 whole countries were destroyed, big imposing bridges (real ones) were blown to bits from East to South of Europe—and here a tiny-weeny bridge lasted 11 whole years, and he complains yet!"

New Careers in Smuggling . . .

The Cyclopean eye of the Associated Press flashes toward the Canadian border and picks up a story concerning the smuggling of what the news service calls "false teeth." The customs service has placed dentures

in the category of narcotics, furs, jewels, and silk smuggling and he who goes northward across the border edentulous and returns with teeth bought in Canada is subject to the charge of smuggler.

The story tells us that in the last few months fifty sets of dentures have been pried loose from the mouths of wearers as smuggled goods. The story goes on to say that since Canada went to war the fees for full dentures have been greatly reduced, and the implication is that the bridges and ferries and roads across the border are swarmed with edentulous folk seeking bargain teeth. This we know is absurd. First, we know that it is unlikely that there has been any appreciable reduction by ethical dentists in Canada on denture fees. Second, it is unlikely that there will ever be a swarm of denture seekers going in any direction.

If this oral searching on the part of customs inspectors keeps up, it will be necessary to add dentists to the border patrols. Why not, while they are at it, x-ray teeth to be sure that opium is not being stored in root canals or to see whether the Duchess's jewels are vulcanized into a denture or military plans and secrets harbored in gold shell crowns?

Maybe we can whoop it up loud enough to show that the mouth is such a likely place to secret treasure that we can create a bunch of jobs for our political-minded colleagues.

Canada and the United States have always enjoyed the most cordial relationship and it is straining a bit at a technicality to penalize people who wish to go to a friendly and neighboring country to have dental services performed. Dentures made in Canada are certainly not subject to resale or profit in the United States. Their purchase is entirely a personal affair. It is as absurd as requiring a duty on an abdominal incision incurred in a sur-

gery in Canada. Both are treatments, and since when are treatments for health subject to *duty?*

The article from the Associated Press contends that American dentists protested and insisted that the tariff laws be invoked to prevent denture buying in Canada. For the sake of the good name and dignity of American dental societies, we all hope that no society or group filed such a silly protest with the federal government.—E. J. R.

DENTAL MEETING

Dates

American Dental Association, annual meeting, Hotel Statler, Cleveland, Ohio, September 9-13.

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American Dental Assistants Association, sixteenth annual meeting, Hotel Cleveland, Cleveland, Ohio, September 9-12.

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The American Dental Hygienists Association, annual meeting, Carter Hotel, Cleveland, Ohio, September 9-13.

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Association of Women Dentists, nineteenth annual meeting, Hotel Cleveland, Cleveland, Ohio, September 9.

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University of Buffalo Dental Alumni Association, fortieth annual meeting, Hotel Statler, Buffalo, New York, October 8-10.

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American Association for the Advancement of Oral Diagnosis, annual meeting, Academy of Medicine Building, 2 East 103rd Street, New York, N. Y., October 17-18.

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Odontological Society of Western Pennsylvania, Fall meeting, William Penn Hotel, Pittsburgh, October 22-24.

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Greater New York Meeting, Hotel Pennsylvania, New York City, December 2-6.

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